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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,929	10/10/2001	Richard C. Rose	109039	4843

7590 01/11/2007  
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EXAMINER
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WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
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2626

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 09/972,929	Applicant(s) ROSE ET AL.	
	Examiner James S. Wozniak	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,13,14,16,21 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,13,14,16,21 and 24-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. In response to the office action from 8/1/2006, the applicant has submitted an amendment, filed 11/1/2006, amending claims 1, 5, 13-14, adding claims 25-28, canceling claims 9 and 11-12, and arguing to traverse the art rejection based on the amended limitations (*Amendment, Page 8*). The applicant's arguments have been fully considered but are moot with respect to the new grounds of rejection, necessitated by the amended claims and further in view of Cannelli et al (*U.S. Patent: 5,072,415*).

2. Due to the cancellation of claims 9 and 11-12, the examiner has withdrawn the previous 35 U.S.C. 101 rejection directed towards non-statutory subject matter.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 3-8, 13-14, 16, 21, and 24-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gong (U.S. Patent: 6,418,411) in view of Sejnoha (*U.S. Patent: 5,008,941*) and further in view of Cannelli et al (*U.S. Patent: 5,072,415*).

With respect to **Claims 1, 5, and 13**, Gong discloses:

Determining parameters of a background model of a received voice request (*on-line noise compensation, Fig. 1, Elements 19-20; determining background noise parameters, Col. 2, Lines 35-47*);

Determining parameters of a transducer model (*one time adaptation, Fig. 1, Element 12; and calculating microphone (transducer) characteristics, Col. 1, Lines 59-62*);

Determining an adapted speech recognition model for a speech recognition model based the background model and the transducer model (*producing an adapted model based on the inputs from the on-line noise estimation and the one-time adaptation (transducer adaptation), Fig. 1, Element 20 and Col. 2, Lines 44-50*).

Determining information in the voice request based on the adapted speech recognition model (*steps 4 and 5, Col. 2, Lines 58-61*);

Gong does not specifically suggest that a transducer model is updated periodically, however Sejnoha teaches such a periodic transducer model update (Col. 3, Lines 5-67; Col. 6, Line 41- Col.7, Line 17).

Sejnoha further discloses method implementation using a computer processor, which would inherently require method storage in some type of computer readable medium for achieving method implementation (*Col. 5, Lines 24-48*).

Gong and Sejnoha are analogous art because they are from a similar field of endeavor in speech signal processing utilizing noise estimation. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gong with the means for periodically updating a transducer model as taught by Sejnoha in order to implement more accurate speech recognition by tracking and compensating for time variant parameters that can degrade recognition performance (*Sejnoha, Col. 3, Lines 5-17*).

Although Gong and Sejnoha disclose periodically tracking noise parameters for speech recognition in the form of background and transducer distortion, Gong and Sejnoha do not specifically suggest that this updating period can be adjusted based on the amount of successive changes in the sampled noise data, however, the examiner notes that changing a sampling period based on noise conditions is well known in the art as is evidenced by the Cannelli reference. Cannelli teaches the concept of adjusting a sampling period based on noise fluctuation, wherein little change in noise level (maintaining an average noise level) increases a sampling time (*Col. 2, Lines 35-65*).

Gong, Sejnoha, and Cannelli are analogous art because they are from a similar field of endeavor in noise estimation. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gong in view of Sejnoha with the sampling period adaptation concept taught by Cannelli in order to achieve a more accurate measurement of speech signal interference (*Cannelli, Col. 1, Lines 57-66*).

With respect to **Claims 3, 7, and 25**, Gong additionally discloses:

The parameters of the background model are determined based on a first sample period (*sample period for background noise estimation, Fig. 2, Col. 5, Lines 29-32*).

The parameters of the transducer model are determined based on a second sample period *(sample for a transducer model during a one time adaptation, which takes place before on-line adaptation and thus, inherently requires a second, distinct sampling period, Col. 5, Lines 23-28)*.

With respect to **Claims 4, 8, and 26**, Gong additionally discloses:

Saving at least one of the parameters of the background model and the parameters of the transducer model *(background noise is recorded and estimated, Col. 2, Lines 43-44)*;

Determining the adapted speech recognition model based on the at least one sample period and at least one of the background model and the transducer model *(after noise sampling, the system then proceeds to produce an adapted model based on the inputs from on-line noise compensation, Fig. 1, Element 19; and one-time adaptation (transducer adaptation), Fig. 1, Element 20; and Col. 2, Lines 44-50)*.

**Claim 6** contains subject matter similar to Claim 1, and thus, is rejected for the same reasons.

With respect to **Claim 14**, Gong recites:

Determining user specific parameters of a background model for a received voice request *(on-line noise compensation, Fig. 1, Elements 19-20; determining background noise parameters, Col. 2, Lines 35-47; and speaker-adapted models, Fig. 1, Element 12)*.

Determining parameters of a background model of a received voice request *(on-line noise compensation, Fig. 1, Elements 19-20; determining background noise parameters, Col. 2, Lines 35-47)*;

Determining parameters of a transducer model *(one time adaptation, Fig. 1, Element 12; and calculating microphone (transducer) characteristics, Col. 1, Lines 59-62)*;

Determining an adapted speech recognition model for a speech recognition model based on at least one of the background model and the transducer model (*producing an adapted model based on the inputs from the on-line noise estimation and the one-time adaptation (transducer adaptation)*), Fig. 1, Element 20 and Col. 2, Lines 44-50).

Determining information in the voice request based on the adapted speech recognition model (*steps 4 and 5, Col. 2, Lines 58-61*);

Gong does not specifically suggest that a transducer model is updated periodically, however Sejnoha teaches such a periodic transducer model update (Col. 3, Lines 5-67; Col. 6, Line 41- Col.7, Line 17).

Gong and Sejnoha are analogous art because they are from a similar field of endeavor in speech signal processing utilizing noise estimation. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gong with the means for periodically updating a transducer model as taught by Sejnoha in order to implement more accurate speech recognition by tracking and compensating for time variant parameters that can degrade recognition performance (*Sejnoha, Col. 3, Lines 5-17*).

Although Gong and Sejnoha disclose periodically tracking noise parameters for speech recognition in the form of background and transducer distortion, Gong and Sejnoha do not specifically suggest that this updating period can be adjusted based on the amount of successive changes in the sampled noise data, however, the examiner notes that changing a sampling period based on noise conditions is well known in the art as is evidenced by the Cannelli reference. Cannelli teaches the concept of adjusting a sampling period based on noise fluctuation, wherein

little change in noise level (maintaining an average noise level) increases a sampling time (*Col. 2, Lines 35-65*).

Gong, Sejnoha, and Cannelli are analogous art because they are from a similar field of endeavor in noise estimation. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gong in view of Sejnoha with the sampling period adaptation concept taught by Cannelli in order to achieve a more accurate measurement of speech signal interference (*Cannelli, Col. 1, Lines 57-66*).

With respect to **Claims 16 and 27**, Gong recites;

Sampling periods of speech inactivity while receiving the voice request (*speech pauses, Col. 5, Lines 29-32*).

With respect to **Claims 21, 24, and 28**, Cannelli discloses:

Dynamically determining the periodic time based, at least in part, on a magnitude of determined changes in the sampled noise information (*fluctuation in noise, Col. 2, Lines 35-65*).

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after



the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Freeman et al (*U.S. Patent: 5,276,765*)- discloses more frequent updating of a noise spectrum in non-stationary noise environments.

Asghar et al (*U.S. Patent: 6,009,391*)- discloses adjusting a sampling window in response to a noise signal frequency.

Schrogmeier et al (*U.S. Patent: 6,687,669*)- discloses updating a noise level less frequently when a noise spectrum changes slowly with respect to time.

Murase (*U.S. Patent: 7,139,393*)- discloses a method for estimating an environmental noise level based on changes in sampling levels.


Das et al (*"Adaptation Techniques for Ambience and Microphone Compensation in the IBM Tangora Speech Recognition System," 1994*)- teaches noise and microphone effect compensation for speech recognition.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak  
12/7/2006

  
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